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**A SYSTEM AND METHOD FOR
PROBABILISTIC EXEMPLAR-BASED PATTERN TRACKING**

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ABSTRACT OF THE INVENTION

The present invention involves a new system and method for probabilistic exemplar-based tracking of patterns or objects. Tracking is accomplished by first extracting a set of exemplars from training data. The exemplars are then
15 clustered using conventional statistical techniques. Such clustering techniques include *k*-medoids clustering which is based on a distance function for determining the distance or similarity between the exemplars. A dimensionality for each exemplar cluster is then estimated and used for generating a probabilistic likelihood function for each exemplar cluster. Any of a number of
20 conventional tracking algorithms is then used in combination with the exemplars and the probabilistic likelihood functions for tracking patterns or objects in a sequence of images, or in a space, or frequency domain.